forming a metal nitride film on the bottom and side wall of the contact hole;

carrying out a first heating process at 600°C or lower on the substrate;

carrying out, during the first heating process, a second heating process for 10 msec or shorter with light whose wavelength is shorter than a light absorption edge of silicon;

forming a contact conductor in the contact hole after the second heating process; and

forming, on the insulating film, wiring that is electrically connected to the substrate through the contact conductor;

wherein during the second heating process the silicide layer is converted from a mono-silicide to a di-silicide layer.

8. (Amended) A method of manufacturing a semiconductor device, comprising:

forming an insulating film on a silicide layer formed at the surface of a silicon semiconductor substrate;

etching the insulating film to form a contact hole in which the silicide layer is exposed;

forming a metal nitride film on the bottom and sidewall of the contact hole;

carrying out a first heating process at 600°C or lower on the substrate;

carrying out, during the first heating process, a second heating process for 10 msec or shorter with light whose reflection coefficient for metal including the metal nitride film is 0.5 or lower;

forming a contact conductor in the contact hole after the second heating process; and

forming, on the insulating film, wiring that is electrically connected to the substrate through the contact conductor;

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wherein during the second heating process the silicide layer is converted from a mono-silicide to a di-silicide layer.

9. (Amended) A method of manufacturing a semiconductor device, comprising:

forming a metal film on source/drain regions formed at the surface of a silicon semiconductor substrate and on a polysilicon gate electrode formed on a gate insulating film that is formed on the substrate between the source/drain regions;

carrying out a first heating process on the substrate, to change the metal film into a metal monosilicide film;

removing unreacted parts of the metal film;

carrying out a second heating process at 600°C or lower on the substrate; and

carrying out, during the second heating process, a third heating process for 20 msec or shorter with light whose main wavelength is shorter than a light absorption edge of silicon, to change the metal monosilicide film into a metal disilicide film;

wherein during the second heating process the silicide layer is converted from a mono-silicide to a di-silicide layer.

10. (Amended) The method as claimed in claim 9, the metal film is selected from the group consisting of cobalt (Co), titanium (Ti), nickel (Ni), hafnium (Hf), zirconium (Zr), palladium (Pd), or platinum (Pt).

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